

-5-

REMARKS

Claims 20-34 were addressed in the subject office action. The claims stand rejected under 35 U.S.C. 102.

Rejection of Claims 20-26, 30 and 31 under 35 USC §102

The above-identified claims stand rejected under 35 U.S.C. §102 as being anticipated by RE 30,320 to Lowther ("the Lowther RE reference"). Specifically, the Examiner asserts that if the values for the pulse width, sparking potential and discharge gap are applied to the equations provided in the Declaration under Rule 1.132 filed on October 13, 2003 by the Applicant, the value of the electric field and the rate of change of the electric field would be 7174 V/mm and 3.41 V/mm/ns, respectively, and that this falls within the range of the rejected claims.

Initially, it is noted that the Examiner may have made an inadvertent, perhaps typographical, error in assessing the Lowther RE reference. The asserted rate of change of the electric field of 3.41 V/mm/ns (or 0.0341 kV/mm/10ns) is significantly less than the rate of claims 20 and 23, which specify a rate "faster than 3kV/mm/10ns," so the asserted rate would not anticipate claim 20 or claim 22. However, it is believed that the maximum rate of change of the electric field of the Lowther RE reference device would be correctly stated to be 341 V/mm/ns, or 3.41 kV/mm/10ns, which would fall in the range originally defined by claims 20 and 23. The stated rejection is now addressed on the basis that the Lowther RE reference is assessed as disclosing a maximum rate of change of 3.41 kV/mm/10ns.

In response, the Applicant has amended independent claims 20 and 23 to recite a rate of change in excess of what the device in the Lowther RE reference achieves, by adding thereto the limitation of claim 22, which is now canceled. Claims 20 and 23 now specify a rate of change of the electric field of faster than 10kV/mm/10ns. This amendment provides a patentable distinction over the Lowther RE reference, because nothing in the Lowther RE reference indicates that a rate of 10 kV/mm/10ns would be achieved by the device disclosed therein.

Rejection of claims 23-34 under 35 USC §102

The above-identified claims stand rejected as being anticipated by U.S. Patent 4,869,881 to Collins ("the Collins reference").

-6-

Addressing first the rejection of claim 34, the Applicant responds by amending claim 34 to provide a nonobvious distinction relative to the Collins reference. Claim 34 now defines an apparatus that comprises, *inter alia*, a voltage pulse generating circuit comprising a FET having a switching device connected to its gate.

The Collins reference shows a circuit in which a FET (MOSFET 128) forms part of a timing circuit that drives an SCR 121 which chops or switches a DC voltage to generate a high frequency AC signal (see column 7, lines 24 to 27) in an output circuit. The operation of the SCR is determined by the MOSFET. There is no switching device shown controlling the gate of the MOSFET; the MOSFET drain/source voltage, which drives an SCR, is controlled via a variable resistor and a charge storage device connected to the FET drain/source circuit, not to the FET gate (see column 7, lines 16-22 and Figure 13).

In contrast to what is shown in the Collins reference, claim 34 as now amended states that the FET is driven by a switching device that is connected to the gate of the FET. As a result of this novel configuration, the FET can function as a switched voltage output device rather than part of a timing circuit, since it is distinct from the charge storage device and the switching device that control the timing of the output signal. This is in contrast to the Collins reference, which discloses an FET as part of the timing circuit that drives an SCR, which is part of the output circuit.

Reverting now to claims 23-33, the stated rejection is respectfully traversed on the ground that nothing in the Collins reference indicates that the device disclosed therein is capable of achieving the rate of change in the electric field recited in claim 23, even prior to the amendment entered herewith. It is respectfully submitted that in order to sustain this rejection, the Examiner will have to provide on the record some evidence to support the contention that those of skill in the art would recognize that claimed rate of change is necessarily present in the disclosure of the Collins reference. Since there appears to be nothing in the reference from which to determine any rate of change information, the Collins reference fails to provide an adequate *prima facie* basis for a rejection of these claims. The rejection of claims 23-33 based on the Collins reference is, accordingly, respectfully traversed.

Claim 27 provides an additional basis of patentability that is independent of the limitations of claim 23, by stating that the self-oscillating circuit comprises an FET having a switching device from a switch circuit connected to the gate of the FET, to deposit thereon charge from a storage device in the switch circuit. Claim 27 thus contains the combined limitations of

-7-

claims 34 and new claim 35, and is patentable (with claims 28 and 29 dependent therefrom) for the reasons that those claims are patentable, as discussed herein.


New claim 35

New claim 35 finds clear support in the application as filed, e.g., in Figure 4. This claim is patentable at least because it depends from a patentable base claim. Claim 35 is also patentable because in the claimed configuration, the charge from the charge storage device is delivered to the gate of the FET (via the switching device); in the Collins reference, there is nothing shown that delivers charge from the storage device (capacitor 134, Figure 13) of the switching circuit to the gate of the FET. The claimed configuration can result in an improvement in the rise time of a voltage pulse in the output circuit of the FET, as disclosed in the application at, e.g., page 3, lines 12-13.

Reexamination and reconsideration of the application in view of the foregoing amendments and remarks is respectfully requested.

Respectfully submitted,

CANTOR COLBURN LLP

By 

Frederick A. Spaeth

Registration No. 33,793

Date: December 13, 2004
CANTOR COLBURN LLP
55 Griffin Road South
Bloomfield, CT 06002
Telephone (860) 286-2929
Facsimile (860) 286-0115